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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,997	04/25/2006	Michalakis Averkiou	US030442US	7249

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EXAMINER

LEACH, CRYSTAL I

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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10/03/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,997	Applicant(s) AVERKIOU ET AL.	
	Examiner CRYSTAL I. LEACH	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/25/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statements (IDS) submitted on April, 25, 2006 is in compliance with 37 CFR 1.97 and 1.98. The references therein have been considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Chandler (5,860,931).
4. Regarding claim 15, Chandler teaches an ultrasound imaging system (100), comprising: an ultrasound scanhead (160) having a plurality of array transducer elements (see fig. 1 and col. 4, l. 27-32); a transmitter (165, 120) coupled to the scanhead, the transmitter being operable to couple a first signal to a first plurality of the transducer array elements having an intensity that causes broad ultrasound waves to be generated by the array transducer elements with a sufficient amplitude to destroy microbubbles in tissues insonified by the ultrasound, the transmitter further being operable to couple a second signal to a group of transducer elements having an intensity that causes focused ultrasound to be generated by the array transducer elements with an insufficient amplitude to destroy significant amounts of microbubbles in tissues insonified by the ultrasound (see fig. 1 and 5, col. 8, l. 58-60, col. 4, l. 7-14

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and 24-43, col. 9, l. 11-16 and 23-34); an ultrasound receiver (165, 125, 170) coupled to the scanhead, the receiver being operable to couple respective ultrasound reflection signals from the transducer elements in response to the second signal (col. 8, l. 60-65); a processor (110, 175, 195) coupled to the transmitter to cause the transmitter to couple the first signal to elements of the transducer array and then repetitively couple the second signal to the transducer elements, the processor further being coupled to the ultrasound receiver and being operable to process signals from the receiver generated responsive to the ultrasound reflection signals (see col. 9, l. 21 – col. 10, l. 12); and a display device (145) coupled to the processor for displaying ultrasound images generated from the processed signals from the receiver (see col. 9, l. 52-59).

Regarding claims 16-19, Chandler teaches wherein the ultrasound scanhead comprises an ultrasound scanhead having a two-dimensional array of transducer elements and the ultrasound scanhead comprises an ultrasound scanhead having a phased array transducer (see fig. 1 and col. 4, l. 27-32) and wherein the ultrasound scanhead comprises an ultrasound scanhead generating a plane-wave ultrasound beam responsive to the first signal being applied to the first plurality of the transducer array elements (see fig 1 and 5, col. 4, l. 27-32).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandler (5,860,931).

Chandler teaches an ultrasound method and system for measuring perfusion wherein the method comprises transmitting at least one broad beam of microbubble-destroying ultrasound into tissues (see abstract). The system of Chandler is capable of both transmitting microbubble-destroying beams and imaging beams (see col. 5, l. 12-23) and teaches that the parameters and regions in which the beams are applied can be selectively chosen by a user and teaches receiving echoes from the transmitted imaging beams, processing the reflections and displaying an ultrasound perfusion image (see col. 8, l. 50 - col. 10, l. 12 and col. 11, l. 25-32). Chandler also teaches measuring concentration levels of a contrast agent during reperfusion wherein the timing of measurements can be regularly, irregularly or randomly spaced in time (see col. 6, l. 29-44). Chandler teaches wherein transmitting at least one broad beam of microbubble-destroying ultrasound further comprises setting at least one of the transmission parameters of beam focus, transmit aperture, or transmit apodization in correspondence with a desired first area size and wherein transmitting at least one broad beam of microbubble-destroying ultrasound further comprises transmitting a plurality of broad beams through volumetric regions in different angular directions (see col. 4, l. 24-44). See also col. 2, l. 63 – col. 6, l. 55.

Chandler does not explicitly teach that the first region is larger than the second and third regions. However, it would be obvious to one of ordinary skill in the art that

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since more than one region of interest can be analyzed and affected by the micro-bubble beam and imaging beam and since a user is able to alter the parameters of the region (see col. 8, l. 50 – col. 9, l. 31 and col. 11, l. 25-32), regions could be set to be either smaller or larger as compared to other regions if desired by the user for a particular procedure.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hossack et al. (5,944,666) teach an ultrasonic method for imaging blood flow including disruption or activation of contrast agent; Krishnan et al. (6,340,348) teach contrast agent imaging with destruction in diagnostic medical ultrasound.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CRYSTAL I. LEACH whose telephone number is (571)272-5211. The examiner can normally be reached on Monday through Friday, 8 am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/
Supervisory Patent Examiner, Art
Unit 3737

/Crystal I Leach/
Examiner, Art Unit 3737